Ontario Geological Survey

Northern Ontario
Engineering Geology Terrain Study 83

ELK LAKE AREA

(NTS 41P/NE)

District of Timiskaming

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ONTARIO MINISTRY OF NORTHERN DEVELOPMENT AND MINES
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by

M.A. Roed

1979

Ontario

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MAP
(accompanying report)

Map 5020 (coloured) – Northern Ontario Engineering Geology Terrain Study, Data Base Map, Elk Lake (NTS 41P/NE). Scale 1:100 000.

Northern Ontario
Engineering Geology Terrain Study 83

ELK LAKE AREA

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District of Timiskaming

by

M. A. Roed[1]

1.0 INTRODUCTION:

This report contains an inventory of regional engineering terrain conditions in the Elk Lake area, District of Timiskaming. It forms part of a series of publications which provide similar terrain data for some 370 000 km^2 of northern Ontario.

The area, which covers NTS block 41P/NE, lies between Latitudes 47°30′N and 48°00′N and Longitudes 80°00′W and 81°00′W. It is sparsely populated, with an economy based on extensive forestry operations, mining for barite and aggregate, mineral exploration, tourism, and limited agriculture in the eastern part.

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1.1 TERRAIN MAPPING PROGRAM:

The purpose of the mapping is to provide a guide for engineering and resource planning functions at a level of detail consistent with a scale of 1:100,000. The terrain information is contained on the Data Base Map (OGS Map 5020, accompanying this report).

Interpretation of black and white aerial photographs, at a scale of approximately 1:50,000, was the primary method of obtaining this terrain data. The interpretation includes information from relevant published literature, and the main roads in the area were traversed during the summer of 1977 to provide spot checks on the photogeologic interpretation. Thus, the map represents a reconnaissance overview of the engineering conditions of the terrain.

An engineering terrain legend was developed to facilitate the mapping and to provide a common information base for the entire map series. This legend is shown on the accompanying Data Base Map. Further information on the mapping techniques, legend format, and possible uses of this data is available in the "Ontario Engineering Geology Terrain Study Users' Manual" (Gartner, Mollard and Roed, in preparation), a companion publication to this series of maps and reports.

1.2 PREVIOUS WORK:

The surficial deposits have been mapped or considered on a reconnaissance basis by Boissonneau (1965, 1968), Prest (1969, 1970), Prest *et al.* (1967), Hughes (1965), the Ontario Land Inventory (1976), Skinner (1969), Dean (1956), and the Canada Land Inventory (1971). Regional bedrock geology has been compiled by Pyke *et al.* (1973) and preliminary detailed geologic maps are available for certain parts of the area from the Ontario Geological Survey. The mineral potential has been summarized by Springer (1977). Relevant engineering soil properties for clay deposits in the area have been published by Lacasse and Ladd (1977). An historical account of the exploration and development of the region has been compiled by Cassidy (1976).

2.0 GEOLOGIC SETTING:

In a general sense, terrain in the map-area is composed of two fundamentally different materials: bedrock of Precambrian age and unconsolidated surficial material comprising glacial and nonglacial deposits of Quaternary age. These materials, alone or in combination, constitute the basic landform element of the engineering geology terrain units that are to be described in detail. Brief summaries of the bedrock geology, Quaternary geology, and physiography are given below.

2.1 BEDROCK GEOLOGY:

The bedrock in the Elk Lake area is of Precambrian age. The southern and western parts of the area are underlain mainly by sedimentary rocks belonging to the Middle Precambrian Cobalt Group, together with some associated mafic intrusive rocks (Pyke *et al.* 1977). The central and northeastern parts are underlain mainly by Early Precambrian felsic intrusive rocks.

Faults and joints in the bedrock are numerous and the presence of many faults is reflected in the terrain. The most prominent in the map-area are parallel, northwest-trending fault systems that include the Cross Lake Fault and the Montreal River Fault (Pyke *et al.* 1977).

Mineral potential is high in many parts of the map-area. High potential for gold, silver, copper, lead, and zinc occurs in a broad zone between the village of Elk Lake and Charlton Station. The copper and gold potential is high around Matachewan and small belts with high potential for gold, silver, copper, and cobalt occur at Gowganda, Breeze Lake, and Midlothian Lake (Springer 1977).

2.2 QUATERNARY GEOLOGY:

Surficial deposits of glacial and nonglacial origin occur in the area. Glacial deposits consist of sandy bouldery till in ground moraine and hummocky moraine, glaciofluvial sand and gravel in eskers, kames, outwash plains, and deltas, and glaciolacustrine clay. Nonglacial deposits include eolian sand, alluvial sand and silt, colluvium, and organic deposits of peat.

Northern Ontario was glaciated by continental ice sheets at least four times during the Pleistocene. However, only the deposits of the last glaciation, the Laurentide of Wisconsinan age, are preserved in the Elk Lake area.

The Keewatin lobe of the Laurentide ice sheet advanced southward into the area approximately 100 000 years ago at the beginning of the Wisconsinan. It ground its way across the rugged Precambrian terrain, deepening pre-existing valleys and disrupting normal drainage. After having advanced as far south as Minnesota, the glacial front had receded to the Elk Lake area by Late Wisconsinan time (approximately 11 000 years ago). It may have disappeared completely from the area and then readvanced to the position presently marked by the Sultan Scarp (see Section 2.3) or it may have formed the Sultan Scarp during a halt in its recession. In either event, the Sultan Scarp in the southwestern part of the area, and some esker and deltaic complexes in the southern part of the area, represent a major stillstand of this ice sheet. Meltwater flowed southward from the glacial front along the Sultan Scarp and into Lake Barlow and the Montreal River in the southeastern part of the area.

By approximately 9 500 years ago, the glacier had disappeared permanently from the map-area. Further north, Lake Barlow joined with Lake Ojibway to form Lake Barlow-Ojibway. Meltwater from the Elk Lake valley emptied into this lake through a spillway in the eastern part of the map-area. Then, approximately 8 700 years ago, the obstructions along the Lake Timiskaming valley were breached and Lake Barlow-Ojibway drained in several stages which may have included catastrophic erosion.

Modern lakes and rivers came into existence shortly after this event. Some post-glacial uplift in the area has resulted in the incision of the Montreal River and some creeks; landslides have affected a few clay slopes; and extensive eolian activity has affected the outwash plains, but otherwise the land has been little modified since the retreat of the ice sheet.

2.3 PHYSIOGRAPHY:

The Elk Lake area is situated in a physiographic division of the Canadian Shield known as the Cobalt Plain (Bostock 1970). The area can be subdivided, on the basis of relative relief, into clayey and sandy lowlands interrupted by rocky uplands. Sandy plains, referred to collectively as the Sultan lowland, occur in the western part of the map-area and pass gradually into rocky uplands to the north and east. The New Liskeard lowland occupies a linear, fault-controlled depression in the northeastern part of the area and is flanked on the west by more rocky uplands.

Topography in the Sultan lowland ranges from planar and gently undulating to hummocky. Elevations range from 360 and 425 m above sea level, with some hills reaching 460 m. The most striking physiographic features of the Sultan lowland are a flat, nearly featureless, sand and gravel plain and an associated north-facing scarp, which extends intermittantly in an arc from Haines Creek in Charlers Township westward for a distance of 180 km. Extensive esker complexes terminate at this feature and linear belts of organic terrain and poorly developed raised beaches parallel the scarp in places. This major terrain feature is of glacial origin, although the scarp is not continuously developed. It is proposed that this feature be called the Sultan Scarp.

The western part of the New Liskeard lowland in this area is of low relief, but characterized by rugged topography with numerous bedrock outcrops and widespread sand plains. Elevations range from about 240 to 365 m above sea level.

Rocky uplands range from ridged and plateau-like to hilly or undulating, with both irregularly shaped and linear knobs ranging in elevation from about 300 to 600 m above sea level. Crystalline or sedimentary bedrock with a discontinuous mantle of bouldery sandy till forms most of the hills. Hummocky moraine, glaciofluvial sand and gravel plains, and organic depressions occur in poorly developed valley systems. Linear glacial flow features are common throughout the upland terrain.

Most uplands are marked by prominent north-trending patterns of narrow valleys that are controlled either by faults, such as the Montreal River Fault system, or by joints in the Precambrian bedrock.

Lakes are common physiographic features of the uplands, and almost all shorelines are rocky or bouldery and very irregular. Many of the lakes are connected by narrow, poorly developed alluvial channels which are characterized by rapids and low waterfalls, or by small linear ponds or lakes and organic depressions.

3.0 ENGINEERING TERRAIN UNITS:

Engineering terrain units are composed of a combination of various materials (unconsolidated and/or bedrock) which form recognizeable landforms with certain engineering characteristics. Major terrain unit groups and the engineering significance of each are discussed in detail. These include bedrock terrain (RN), moraine (MG,MH), glaciofluvial outwash (GO), eskers (GE), and kames (GK), and organic terrain (OT). Less significant terrain units include alluvium (AP) and eolian deposits (ED). Diagrammatic sketches of typical terrain settings are given in Figure 1. Table 1 summarizes the composition, topography, and drainage of all major terrain units and rates each unit in terms of important soil characteristics according to engineering criteria and in terms of suitability for principal engineering uses.

3.1 BEDROCK:

Examples:

$$\frac{RN(tMG)}{Mj\text{-}D} \qquad \frac{RN(tMG)}{Mn\text{-}D} \qquad \frac{RR(tMG)}{Hj\text{-}D}$$

$$\frac{RN(tMG)(pOT)}{Mn\text{-}D(D)(W)} \qquad \frac{RN(sLP)(tMG)}{Mn\text{-}D(M)(D)}$$

Ridged bedrock terrain (RR) dominates the western part of the Elk Lake map-area. Bedrock is either at the surface or within 1 to 2 m of the surface, although patches of ground moraine (MG) till occur throughout and deposits of peat in organic terrain (OT) occur in poorly drained depressions. Most of the bedrock terrain is of high to moderate relief (M) and is rugged (j), ridged (r), or hilly (n) in character. High relief rock terrain is especially prominent southwest of Matachewan. Low relief rock terrain occurs mainly in the eastern part of the area in association with

glaciolacustrine sand and clay (sLP,cLP). Drainage is generally good except for the organic depressions. Small eskers, crevasse fillings, and drumlins occur in rock terrain. Scarps and steep-sided gullies also occur, but are not numerous.

The principal engineering significance of bedrock terrain is that it is difficult and expensive to excavate. Blasting is required for all subsurface excavations. Extensive cut-and-fill operations are required in rugged terrain for transportation route construction, in order to eliminate extreme horizontal and vertical alignments. Many small sand, gravel, and till deposits scattered throughout the terrain provide adequate material for minor access road construction. However, for major transportation routes, aggregate is often imported from considerable distances at high costs.

Bedrock terrain provides excellent foundation conditions in areas that are unaffected by faults and where fracture or joint density is low. The unit also possesses considerable potential for aggregate obtained in rock quarry operations.

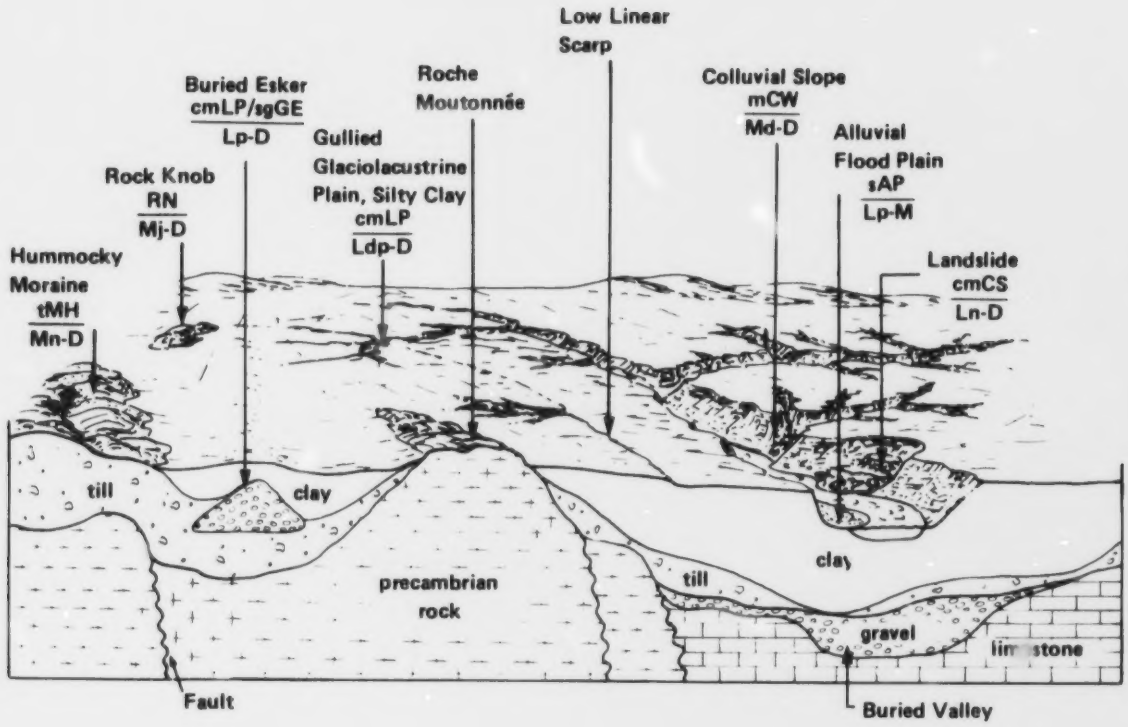
Groundwater potential is generally poor in bedrock terrain, but is usually sufficient for scattered domestic demand. Considerable groundwater production can be expected in fractured localities or in fault zones. Bedrock is unsuitable for waste disposal except where a thick layer (at least 1.5 m) of soil material is present.

3.2 MORAINE:

Examples:

$$\frac{\text{tMG/RN(RN)}}{\text{Mu-D}} \qquad \frac{\text{tMG(RN)}}{\text{Mn-D}} \qquad \frac{\text{tsbMH(RN)}}{\text{Mn-D}} \qquad \frac{\text{tbMH(pOT)}}{\text{Mn-D(W)}}$$

Morainal landforms in this map-area are either ground moraine (MG) or hummocky moraine (MH). Ground moraine (MG), consisting of stoney till (t), occurs extensively throughout the map-area as a major terrain unit or as a subordinate unit in bedrock terrain. The ground moraine in Roadhouse and Wallis Townships in the southern part of the area occurs as an extensive veneer overlying bedrock. The till varies from 1 m to more than 7 m in thickness and commonly occupies rolling terrain of low


Low Linear
Scarp
Buried Esker
cmLP/sgGE
Lp-D
Roche
Moutonnée
Colluvial Slope
mCW
Md-D
Alluvial
Flood Plain
sAP
Lp-M
Rock Knob
RN
Mj-D
Gullied
Glaciolacustrine
Plain, Silty Clay
cmLP
Ldp-D
Hummocky
Moraine
tMH
Mn-D
Landslide
cmCS
Ln-D
till
clay
precambrian
rock
clay
till
gravel
limestone
Fault
Buried Valley

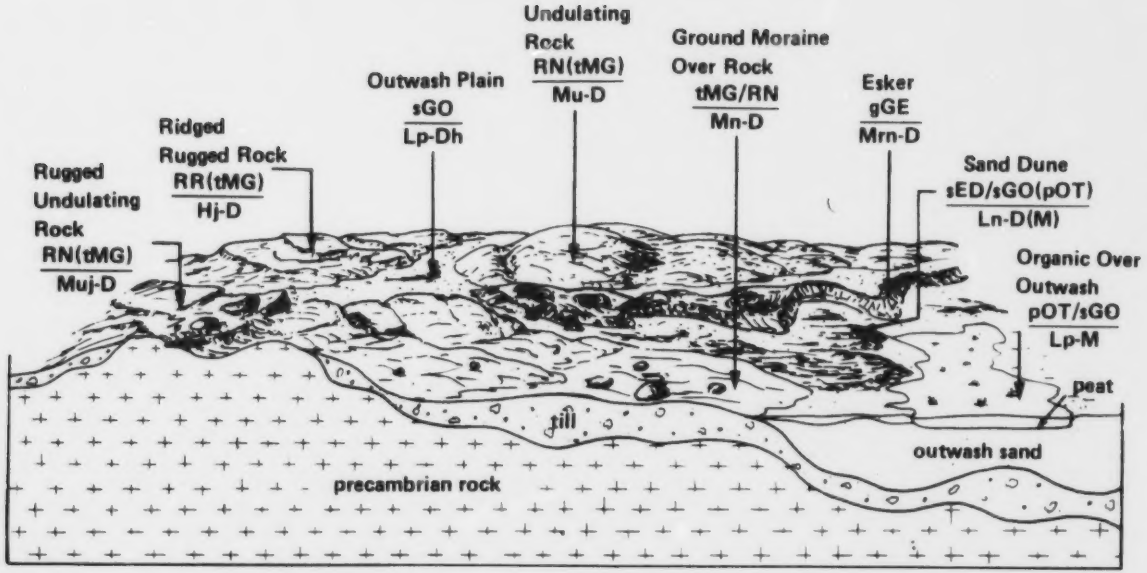


FIGURE 1 – DIAGRAMMATIC SKETCHES SHOWING TYPICAL TERRAIN TYPES AND THEIR REPRESENTATIVE LETTER SYMBOLS.

TABLE 1 SUMMARY OF TERRAIN UNIT CHARACTERISTICS AND ENGINEERING SIGNIFICANCE.

Terrain Unit	Principal Materials	Topography / Drainage	Workability as Construction Material / Permeability	Shearing Strength / Bearing Value	Compaction / Compressibility
Rock Terrain (R)	rock	irregular / dry	not applicable / medium (fracture)	excellent / excellent	not applicable / not applicable
Hummocky Moraine (MH)	till, sand boulders	hummocky / dry	good / medium	good / good	good / low
Ground Moraine (MG)	till, sand boulders	knobby / dry	good / medium	good / good	good / low
Eskers (GE) Kame (GK)	sand gravel	kettled & ridged / dry	excellent / high	excellent / excellent	excellent / low
Outwash (GO) Delta (GD)	sand, gravel	hummocky-planar / dry	excellent / high	excellent / excellent	excellent / low
Glaciolacustrine Plain (LP)	clay, silt fine sand	planar / dry	poor / low	fair / fair	poor / high
Glaciolacustrine Beach (LB)	sand	planar / dry	good / high	good / good	good / low
Alluvium (AP)	sand, silt clay	channelled / mixed	fair / medium	good / poor	fair / medium
Eolian (ED)	sand	ridged, hummocky / dry	fair / high	good / good	good / low
Colluvium Soil (CW,CS)	clay, silt	sloped / mixed	poor / low	poor / poor	poor / high
Colluvium Talus (CT)	rubble	sloped / dry	poor / high	good / poor	poor / low
Organic (OT)	peat	planar / wet	poor / medium	poor / poor	poor / high

Notes:
1. The rating above or below the bar refers to the characteristic or use above or below the bar, respectively, in the column heading.
2. Permeability, compressibility, and frost susceptibility are rated as low, medium, or high; all other characteristics and uses are rated as poor, fair, good, or excellent.

Slope Stability / Frost Susceptibility	Aggregate Supply / Foundations	Highway Subgrade / Route Location	Hydro Easements / Pipeline Routes	Septic Tank Suitability / Solid Waste Landfill	Domestic Groundwater Potential / Large Groundwater Supplies
good (some talus) / not applicable	not applicable / excellent	poor / fair	fair / poor	poor / poor	good / poor
good / low	fair / good	good / good	good / good	excellent / excellent	excellent / good
good / low	fair / good	good / good	fair / fair	excellent / good	good / fair
excellent / low	excellent / excellent	excellent / excellent	good / good	poor / poor	excellent / excellent
excellent / low	excellent / excellent	excellent / excellent	excellent / excellent	poor / poor	excellent / excellent
poor / high	poor / fair	poor / good	good / good	fair / fair	fair / poor
excellent / low	good / good	good / good	good / good	poor / poor	good / poor
fair / medium	poor / poor	poor / poor	poor / poor	poor / poor	good / fair
good / low	poor / good	fair / good	good / good	fair / poor	good / fair
poor / high	poor / poor	poor / poor	poor / poor	poor / poor	fair / poor
good / low	poor / poor	poor / poor	poor / poor	poor / poor	poor / poor
poor / high	poor / poor	poor / poor	poor / poor	poor / poor	poor / poor

3. This is a generalized table intended for use in a number of reports; therefore, all terrain units dealt with in the table will not necessarily appear in each report.

(L) to moderate (M) relief with undulating (u) to slightly knobby (n) topographic character. The overall drainage is good (D). Low, rounded rocky hills (RN) or near-surface bedrock (/R) occur within the ground moraine, as does organic terrain (OT) in poorly drained depressions (W). Patches of glaciofluvial sand and gravel, eskers, kames, and hummocky moraine are also associated with the ground moraine. Geological contacts with these units are normally abrupt, except in the case of hummocky moraine and rock terrain where the contacts are often gradational.

Hummocky moraine (MH) consists of sandy bouldery till (tsb) and forms irregular hills in the western part of the area. The thickness of the till is much more variable than in ground moraine and may be as much as 30 m in some localities. Although till is the principal material, stratified sand (s) and gravel (g), pockets of silt (m), and local concentrations of boulders (b) occur in places. Eskers and kames, rock knobs, and organic deposits are commonly associated with the hummocky moraine. Local relief is generally less than 20 m and the character of the surface is knobby (n), hilly, and sometimes kettled (k). Drainage is good (D) except in closed depressions between knobs of till and along poorly developed seepage paths.

Large boulders, patches of poorly drained ground, and the possibility of near-surface bedrock are the principal engineering difficulties that may be encountered in the ground moraine unit. Generally, however, ground moraine poses a few serious construction problems and is superior to rock terrain for route construction because grades are lower and the necessity for rock blasting is less probable. Pockets of granular material occur, and the till itself is amenable to beneficiation in some localities. Foundation conditions are generally good in till terrain. Groundwater potential is fair where the till unit attains an adequate thickness. Where the till is at least 1.5 m thick, it is suitable for septic system installation.

The engineering significance of the hummocky moraine is substantial. The texture of the till makes the unit suitable for use in the large earth embankments required for roads and dams. Also, the chance of finding a sizeable source of granular material within hummocky moraine is good. Conventional construction techniques can be used throughout, except where local relief is very irregular or where near-surface bedrock is encountered. The till in hummocky moraine is probably the best

material in the map-area for attenuation of leachate from municipal land fills and septic drain tile fields. Groundwater potential, although inconsistent, is generally excellent; springs are common at the base of large morainal hills, especially during wet periods of the year.

3.3 GLACIOFLUVIAL:

Examples:

sgGO(pOT) / Lp-M	sgGO(pOT)(sED) / Lpu-D(M)	sgGE(tMH) / Lnu-D	sgGK / Lkn-D

Large tracts of land in the Elk Lake area are underlain by glaciofluvial outwash (GO) composed of sand (s) and gravel (g). Most outwash occurs in the form of undulating (u) plains (p) of low relief (L). The upper 2 m consists of fine- to coarse-grained sand, often underlain by stratified pebble to cobble gravel which, in places, is greater than 5 m thick. The maximum thickness of the material may be in the order of 40 m in some places; this estimate is based on the extent of some of the deposits, especially in the northern part of the map-area, and the fact that rock terrain with relief in this range has been completely covered. Associated units include extensive eolian sand dunes (sED) and organic peat deposits (pOT) in wet depressions (W). The overall drainage is good (D). Other outwash plains and terraces (t) along stream valleys are not as thick or extensive, and rock knobs (RN) and associated organic terrain (OT) are common.

Eskers (GE) are numerous in the map-area; most occur as south-trending, continuous or discontinuous, sinuous, hummocky to rolling ridges of sand and gravel flanked by gently rolling outwash plains. Local relief is usually in the order of 10 to 15 m on an esker. Pits (k), kettle lakes, and isolated steep-sided knobs (n) are common. Most of the eskers appear to consist of sand and gravel in more or less equal proportions, but minor till inclusions and an upper mantle of till occur in places. In the esker core, and also where the slopes are steep, gravel is most likely predominant. Some buried esker extensions occur along the southern edge of the area, especially in the vicinity of the Sultan Scarp in Leith Township.

Kames consist of irregular groupings or belts of hills composed of sand, gravel, and till. Kames differ from eskers in that they are not ridge-like and the internal composition is more heterogenous and variable. In other respects, they are similar to eskers. A notable kame and esker complex occurs at Mosher Lake in the western part of the map-area.

The engineering significance of glaciofluvial outwash, eskers, and kames is related to the excellent characteristics of the materials with respect to use in construction. Potential reserves of aggregate are extremely high in the northern portion of the area. Transportation routes, pipelines, and air strips are easily constructed on the flat outwash plains. Most existing transportation routes in this map-area have taken advantage of this fact. Eskers also have potential as transportation routes, although the sinuous form and some steep topography are disadvantages. Foundation and general construction conditions are excellent in glaciofluvial terrain. Groundwater potential is excellent where the deposits are thick and/or where the water table is high.

Glaciofluvial deposits are not suitable for waste disposal since the materials are permeable and the potential for pollution is high.

3.4 GLACIOLACUSTRINE:

Examples:

$$\frac{\text{csLP(sED)(RN)}}{\text{Lun-M}} \qquad \frac{\text{csLP(RN)(pOT)}}{\text{Lnp-M}} \qquad \frac{\text{sgLD}}{\text{Lp-D}} \qquad \frac{\text{sgGD}}{\text{Lkp-D}}$$

The glaciolacustrine (LP) deposits which dominate the eastern part of the map-area were probably deposited in glacial Lakes Barlow and Barlow-Ojibway. The unit consists mainly of sandy clay (cs), with an extensive beach deposit (LB) and several large deltaic deposits (GD).

The clay terrain is hilly (n) and undulating (u), and is poorly drained (M) in many localities. Varved clay occurs mainly in the subsurface. Eolian sand (sED), peaty organic deposits (pOT), and rock knobs (RN) are common within this terrain unit.

The glaciolacustrine clay terrain grades into extensive outwash deposits around Mountain Lake, near Elk Lake, along the upper reaches of the Little Driftwood River, and along the Kinogami-Robillard Lake Valley. All contacts are generalized and approximate.

An extensive gravelly sand beach (sgLB) occurs near Osseo, at an elevation of about 295 m above sea level. It nearly encircles an esker (GE) and deltaic (GD) terrain unit.

Large deltas (GD) composed of gravelly sand (sg) and sand (s) occur northeast of Osseo and southeast of Mountain Lake. These units are well-drained, planar, and pitted in places.

Aggregate potential throughout much of the glaciolacustrine terrain unit is poor; however, substantial amounts of aggregate occur in deltaic units and small amounts in beach deposits. Construction in glaciolacustrine terrain is easy in terms of excavation, but extensive poorly drained areas do occur and clayey materials are frost susceptible. Foundation conditions are generally good in deltaic and beach deposits.

Groundwater potential in clay terrain is poor, but subsurface sand layers may yield quantities sufficient for domestic use. In granular deltaic deposits, the groundwater potential is high. Well-drained, fine-grained glaciolacustrine deposits are suitable for waste disposal and tile fields, but the general impermeability of this terrain type considerably reduces its potential. Further engineering data on clay are given in Lacasse and Ladd (1977).

3.5 ORGANIC:

Examples:

$$\frac{\text{pOT}}{\text{Lp-W}} \qquad \frac{\text{pOT(sGO)}}{\text{Lp-M}} \qquad \frac{\text{pOT(sLP)}}{\text{Lp-M}} \qquad \frac{\text{pOT(sED)}}{\text{Lp-M}}$$

Organic terrain (OT), composed primarily of peat (p) with some silt (m) and sand (s), occurs throughout the map-area in poorly drained (W) depressions, as both a dominant and subordinate unit. Three notable examples are the deposits along the Montreal River in the southeast corner of the area, in Willison and Flavelle Township in the northern part of the area, and along the East Wapus River in the southwest corner. Associated terrain units include glaciofluvial outwash sand (sGO) and eolian sand (sED).

Construction is difficult and expensive in organic terrain due to the poor drainage conditions and the low strength, low bearing capacity, high compressibility, and extremely high frost susceptibility of the soil materials. The groundwater in organic deposits is generally of poor

quality and unsuitable for drinking. Septic drain tile fields should not be placed on organic terrain.

3.6 EOLIAN:

Examples:

$$\frac{sED(pOT)}{Lp(M)} \qquad \frac{sED}{Lp\text{-}D} \qquad \frac{sED(pOT)}{Lp\text{-}D(M)}$$

Eolian deposits (ED) of fine sand (s) occur mainly along the northern margin of the map-area. The wind-blown deposits are derived from glaciofluvial sand and, in places, form a blanket over adjacent terrain units. Well-formed dunes occur in southwestern Flavelle and northwestern Willison Townships. Drainage varies from good to mixed (D-M), with a high water table in places (Dh), and the topography is low and planar (Lp).

Access roads can be constructed very easily in eolian terrain, but the potential for erosion is high once the protective vegetation cover has been removed. The high water table in certain areas will limit excavations and slumping and piping can also occur. Driven well points will supply enough water for domestic use in eolian deposits below the water table. The pollution potential is high.

3.7 ALLUVIAL:

Examples:

$$\frac{sAP}{Lp\text{-}D} \qquad \frac{pAP}{Lp\text{-}W}$$

Alluvial plains (AP) occur along most river channels, but many are too small to map at the scale of 1:100,000. The alluvial plain along Driftwood Creek in the eastern part of the map-area is composed primarily of sand (s). Silt (m) and peat (p) are also common in alluvium. Relief is low and drainage is most often wet with a high water table.

Foundation conditions are generally poor in alluvial terrain, since materials are fine grained and saturated. Structures built on alluvial plains will be susceptible to flooding and would require suitable protection. Erosion potential and slope instability are high along stream banks, especially in glaciolacustrine (LP) terrain. Groundwater potential is good in gravelly materials and poor in fine-grained materials. Alluvium is not suitable for waste disposal because of periodic flooding and the potential for pollution.

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